

Claims:

1. A method of forming a thin film comprising:
forming a layer of material on at least a portion of at least one surface of a substrate; and
selectively modifying one or more material properties of at least one portion of the formed layer of material
2. The method of claim 1, and further comprising:
removing at least another portion of the formed layer of material.
3. The method of claim 2, wherein said removing at least another portion comprises material that is substantially unmodified in material properties.
4. The method of claim 1, wherein the layer of material is formed by use of one or more deposition processes.
5. The method of claim 4, wherein said deposition processes comprise at least one of: spin coating, spraying, dipping, vacuum deposition and spreading.
6. The method of claim 1, wherein said material layer substantially comprises a sol-gel.
7. The method of claim 1, wherein said selective modifying further comprises:

performing one or more laser annealing processes on said at least one portion of the formed material layer.

8. The method of claim 7, wherein at least one of said laser annealing processes comprises localized annealing using a pulsed excimer laser.

9. The method of claim 7, wherein the formed material layer is selectively annealed, based at least in part on position on said substrate.

10. The method of claim 1, wherein said material properties comprise at least one of: conductivity, consolidation, and crystallinity.

11. A method of forming a thin film, comprising:

a step for forming a layer of material on at least a portion of at least one surface of a substrate; and

a step for selectively modifying one or more material properties of at least one portion of the formed layer of material.

12. The method of claim 11, and further comprising a step for removing at least a substantially unmodified portion of the formed layer of material.

13. The method of claim 11, wherein the layer of material is formed by use of one or more deposition processes.

14. The method of claim 13, wherein said deposition processes comprises: at least one of: spin coating, spraying, dipping, vacuum deposition, and spreading.
15. The method of claim 11, wherein said material layer substantially comprises a sol-gel.
16. The method of claim 11, wherein said step for selectively modifying further comprises:
a step for performing one or more laser annealing processes on said at least one portion of the formed material layer.
17. The method of claim 16, wherein at least one of said laser annealing processes comprises localized annealing with a pulsed excimer laser.
18. The method of claim 16, wherein the formed material layer is selectively annealed based at least in part on position on said substrate.
19. The method of claim 11, wherein said material properties comprise at least one of: conductivity, consolidation, and crystallinity.
20. The method of claim 11, wherein said thin film comprises one or more thin films.
21. The method of claim 20, wherein said one or more thin films comprise a substantially transparent transistor.

22. The method of claim 20, wherein said one or more films comprise at least one of: indium tin oxide, zinc oxide, and zinc tin oxide.
23. A transparent thin film electronic device, formed substantially by a process comprising:
- forming one or more material layers on a substrate;
 - selectively modifying at least a portion of said one or more material layers; and
 - removing at least another portion of said one or more material layers, wherein said at least another portion comprises one or more non-annealed portions of said one or more material layers.
24. The method of claim 23, wherein said removing at least another portion comprises removing material that is substantially unmodified in material properties.
25. The method of claim 23, wherein said one or more material layers are formed substantially by a process comprising one or more deposition processes.
26. The method of claim 25, wherein said one or more deposition processes comprises at least one of: spin coating, spraying, dipping, vacuum deposition and spreading.
27. The method of claim 23, wherein said material layer substantially comprises a sol-gel.
28. The method of claim 23, wherein said selective modifying further comprises:

a process substantially comprising one or more laser annealing processes applied to said at least a portion of said one or more material layers.

29. The method of claim 28, wherein at least one of said laser annealing processes comprises localized annealing using a pulsed excimer laser.

30. The method of claim 28, wherein said at least one or more material layers are based at least in part on position on said substrate.

31. The method of claim 24, wherein said material properties comprise at least one of: conductivity, consolidation, and crystallinity.

32. A system for forming a thin film device, comprising:

a laser annealing device, said laser annealing device being configured to, in operation, selectively anneal at least a portion of one or more material layers formed on a substrate.

33. The system of claim 32, and further comprising a deposition device, said deposition device comprising a spin deposition device, said spin deposition device configured to spin coat at least a portion of said substrate with a liquid precursor material.

34. The system of claim 33, wherein said liquid precursor comprises a sol-gel.

35. The system of claim 34, wherein said sol-gel includes colloidal material, said colloidal material comprising one or more materials at least partially suspended in a solvent.
36. The system of claim 35, wherein said one or more materials comprise at least one of: zinc isopropoxide, zinc chloride, oxide, sulfide, telluride, and selenide.
37. The system of claim 35, wherein said solvent comprises an alcohol solvent.
38. The system of claim 32, wherein said laser annealing device further comprises:
a laser source;
one or more beam control devices;
one or more laser control devices;
one or more position control devices;
said laser source, one or more beam control devices, one or more laser control devices, and one or more position control devices configured to, in operation:
irradiate said at least a portion of said one or more material layers for a particular period of time.
39. The system of claim 38, wherein said laser source comprises at least one of: an excimer laser, a gas laser, a solid state laser, and a fiber laser.
40. The system of claim 39, wherein said excimer laser source further comprises a source material, said source material comprising at least one of: argon fluoride, krypton fluoride, xenon chloride, and xenon fluoride.

41. The system of claim 39, wherein said gas laser source further comprises a source material, said source material comprising at least one of: krypton, argon, copper vapor, helium neon, and carbon dioxide.

42. The system of claim 39, wherein said solid state laser source further comprises a source material, said source material comprising at least one of: Nd:YAG, and erbium.

43. The system of claim 39, wherein said fiber laser source further comprises a source material, said source material comprising ytterbium.

44. The system of claim 38, wherein said thin film device comprises a thin film transistor.

45. A system, comprising:
 means for forming one or more material layers on a substrate; and
 means for selectively laser annealing one or more selected portions of said one or more material layers.

46. The system of claim 45, wherein said means for forming comprises a spin deposition device, said spin deposition device configured to spin coat at least a portion of said substrate with a liquid precursor material.

47. The system of claim 46, wherein said liquid precursor comprises a sol-gel.

48. The system of claim 47, wherein said sol-gel includes colloidal material, said colloidal material comprising one or more materials at least partially suspended in a solvent.
49. The system of claim 48, wherein said one or more materials comprise at least one of: zinc isopropoxide, zinc chloride, oxide, sulfide, telluride, and selenide.
50. The system of claim 48, wherein said solvent comprises an alcohol solvent.
51. The system of claim 45, wherein said means for laser annealing further comprises:
a laser source;
one or more beam control devices;
one or more laser control devices; and
one or more position control devices;
said laser, one or more beam control devices, one or more laser control devices,
and one or more position control devices configured to, in operation:
irradiate said at least a portion of said one or more material layers for a particular
period of time.